
# C. Environmental Planning & Resource Conservation Element

The Environmental Planning & Resource Conservation element of the General Plan describes City of Maricopa's efforts in the area of environmental sustainability and provides a framework for development that conserves resources to protect Maricopa's future. This element addresses protection of air and water quality, land resources, and promoting healthy communities. The policies and strategies in this element are largely broad-based with community-wide applicability. The discussion and strategies are also intended to complement and support those identified in other sections.

- Air Quality
- Floodways & Washes
- Energy Element
- Water Resource Element

# 1. Air Quality

Under the Clean Air Act, the EPA has established air quality standards to protect public health and the environment. Pinal County is ultimately responsible for maintaining compliance with the EPA standards within Maricopa and the greater planning area. The county maintains monitoring stations throughout the county and in Maricopa to collect measurements of air pollutant concentrations. If the concentrations of any pollutant are found to exceed EPA standards, a formal rulemaking process designates the area as not attaining the standards (nonattainment).

Western Pinal County has been found to exceed national standards for three pollutants: ozone, particulate matter, and sulfur dioxide. At lower levels in the atmosphere, ozone is the primary constituent of smog. This is a larger air quality issue in the summer, because the formation of ozone depends upon the presence of sunlight. In Arizona, the summer ozone season begins in April and lasts through September.

Particulate matter includes particles of dirt, dust, soot, smoke, and liquid droplets suspended in the air. Sources include factories, power plants, cars, construction activities, fires, agricultural operations, and windblown dust. Standards for particulate matter are split into two separate criteria based on the size of the suspended particle. The particulates causing concern in Maricopa range in size from 2.5 to 10 micrometers - many times smaller than the width of a human hair.

Sulfur dioxide is a gas formed from the combustion of sulfur-containing fuels, including coal and oil. Gaseous sulfur dioxide reacts readily with other particles in the atmosphere, creating sulfate particles that can lead to respiratory ailments when inhaled.

Air quality issues are not limited to the physical location of the source and the effects of air pollution almost always cross jurisdictional boundaries. The City of Maricopa is cooperating with Pinal County and the Arizona Department of Environmental Quality to monitor air quality and institute policies to reduce contaminants. The City is instituting a number of policies to reduce air pollution, including dust control measures, such as paving on temporary and permanent roadways serving new development; implementing mixed use and Village Center development patterns to concentrate development reducing vehicle trips and emissions; researching clean fuel technologies for City vehicles; expanding local transit services and pursuing regional transit options, and; implementing a complete streets policy to encourage alternative modes of transportation that produce less emissions.

| Goal C1.1: | Promote local and regional efforts to improve air quality. |
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| Objective C1.1.1: | Improve unpaved roads and areas that contribute to dust pollution. |
| Objective C1.1.2: | Establish regulations for cattle yards and other industries that may significantly impact Maricopa's air quality. |
| Objective C1.1.3: | Amend City Code to give the City the authority to enforce dust and pollution standards. |
| Objective C1.1.4: | Encourage means to reduce auto ridership through the use of bicycling, telecommuting for City staff, local transit, and mass transit for Phoenix metro commuters. |
| Objective C1.1.5: | Integrate with the Smart Cities initiatives. |

# 2. Floodways & Washes

The City is proactively addressing the physical constraints and potential hazards posed by the floodways in Maricopa. Three significant washes exist in the community: the Vekol Wash and Tributaries, the Santa Rosa Wash, and the Santa Cruz. The Vekol Wash is the only major watercourse with significant riparian areas remaining. As historically an agricultural area, most storm runoff, including the Santa Rosa and Santa Cruz Washes, is conveyed in graded channels.

The City recognizes the importance of these washes to community connectivity, bio-diversity, safety, and the overall landscape aesthetic. Future improvements to City washes will be designed to enhance the washes as an amenity to the abutting developments and the City as a whole. Wash corridors will be designed to appear natural, with pedestrian and bicycle paths for connectivity, direct access to abutting neighborhoods, view corridors from streets, civic uses such as schools and recreation facilities, and serve as habitat and migration corridors for native wildlife. Those portions of the washes that remain natural, such as portions of Vekol Wash, should be preserved as natural areas. The floodplain strategy along with goals and objectives are discussed in the Public Service section.

# 3. Energy Element

The Energy Element of the General Plan addresses the need and opportunity for energy efficient technologies and behaviors. It also promotes the use of clean energy sources, such as solar, wind, geothermal, and biofuels. Due to growing concern over the environmental degradation caused by fossil fuels and the stability of energy supplies, state law requires that every General Plan include an energy element. The element places the City in a stronger economic, environmental, and social position for development in the future.

The citizens of Maricopa have identified energy conservation efforts to be very important to them and the future of the community. A safe, reliable, and affordable energy supply is important to sustaining Maricopa's overall health. The City's demand for energy will increase with projected population growth and increasing environmental awareness may continue to discourage consumption of non-renewable energy sources. Two things should to occur to effectively manage energy efficiencies and control costs: transition to a renewable energy supply and reduce energy demand. Renewable energy systems allow cities to become more independent from the grid and imported fossil fuels, boost the market for renewable technologies, move to more reliable and affordable resources, and display a visible public commitment to a sustainable energy future.

**2040 Vision:** *Encourage renewable energy use and long-term environmental stewardship.*

Maricopa has high summer "peak" electricity demands, and implementing small scale renewable energy systems can help protect residents and businesses from the costly effects. In addition, as construction methods and insulation technology continue to improve, so too will our ability to build structures that use less energy, contribute to fewer pollutants to our environment, and improve comfort and productivity. Reduced energy in housing, commercial structures, public facilities, and transportation helps maintain local economic vitality and reduces the need for new infrastructure to deliver energy to the City.

Maricopa has a growing renewable energy portfolio. In addition to ED3's renewable energy commitment (refer to Energy Utility discussion), the City has attracted one of the few alternative fuel producers in the State. Pinal Energy LLC, a privately held company, is the first and only ethanol production facility to be built in Arizona. The plant plays an important role in improving Arizona's air quality and makes a local source of ethanol available. Pinal Energy's annual ethanol production rate is 50 million gallons from roughly 18 million bushels of grain acquired from both local producers as well as from the Midwest. The fuel-grade ethanol is used in blending with gasoline components to produce E10, a 10% ethanol blend. The ethanol produced at the plant is also used for the blending of E85, a clean-burning blend of 85% ethanol and 15% gasoline for use in flex fuel vehicles. Production of ethanol results in two other commercially viable by-products: distiller's grain and CO2. Distiller's grain is a feed utilized by

dairies and feedlots. The CO2 produced is captured and recycled for use in the Arizona soft drink, dry ice, and hydroponics industries.

The City will continue to promote Maricopa as a leader of alternative fuel technology, research and development, and eliminate barriers that may discourage or limit sustainable energy applications. The City will also take proactive steps to educate citizens on energy conservation techniques.

# 4. Water Resource Element

**2040 Vision:** *The City must ensure the availability of developable land and water resources required to meet projected growth and development trends*

The water supply and quality within the City is one of the key elements for maintaining sustainable growth and allowing the City to achieve its development goals. By assessing the water demands needed in the future and identifying and acquiring adequate water resources, the City will be able to plan for and meet the demands of future development. Water is a challenging and complex issue, unconstrained by jurisdictional boundaries and requires regional cooperation and long term planning to be sustainable. The water resources element presents a plan for providing Maricopa's residents and businesses with a safe, reliable, and high quality source of water beyond 2040.

Maricopa lies within the Arizona Department of Water Resources (ADWR) designated Pinal Active Management Area (Pinal AMA). The Pinal AMA is defined as our local water planning area by the ADWR. The Pinal AMA includes portions of Pinal, Maricopa and Pima Counties in Central Arizona. The Pinal AMA comprises over 4,000 square miles and consists of five groundwater areas, or sub-basins. It includes 275,000 acres of farmland. Water use is over 800,000 acre feet of water per year. (An acre foot covers one acre of land one foot deep, about the size of a football field. It is 325,851 gallons and can supply two urban households annually, both indoor and outdoor usage.)

## a. Water Supply

Within the Pinal AMA, the majority of water services in and around Maricopa are provided by a private water company, Santa Cruz Water Company (SCWC) (a subsidiary of Global Water Resources), with the older neighborhoods being served or managed by the Maricopa Domestic Water Improvement District (MDWID). These two entities and the services they provide are more thoroughly discussed in the Utilities Services section. Basically, the water providers supply the potable water to all non-agricultural land within Maricopa, and oversee those properties' ground water allotment (Designation) within their respective service areas. Prior to subdivision and development, each property is designated an amount of potable water as determined by the ADWR. Upon development and/or subdivision of a property, the property owner must secure a 100 year assured water supply certificate from ADWR to guarantee present and future water availability to sustain the proposed development.

However, within SCWC's "Service Area Right" (technically known as a Certificate of Convenience and Necessity, or CC&N from the Arizona Corporation Commission (ACC)), a property owner does not have to secure a Certificate of Assured Water Supply individually, as SCWC has a Designation of Assured Water Supply (Designation) for their entire existing and planned service area. SCWC's existing Designation can support the current customer demand plus projected growth for many years. Through developer agreements, any water rights pertaining to a specific property are utilized to under-pin SCWC's Designation. To date, only the water rights associated with the 12 square miles of developed property in the City have been conveyed to SCWC's Designation. In 2014, the total water consumed by all the customers only utilized 25% of the existing Designation. Thus, not only will the current Designation accommodate the City growing significantly in size, but the Designation can continue to grow as new properties develop and water rights continue to be transferred to SCWC for this use.

## Growth

Although SCWC is less than half built out within its current CC&N inside the city limits, the utility continues to actively pursue service territory expansions with property owners located outside the current CC&N when they request potable water service. The latest CC&N expansion was approved by the ACC in 2015. In addition, Maricopa has a substantial planning area outside of the City limits which includes an additional 190 square miles of potential land for development. Inside this planning area, Global Water has already secured an additional 106 off-site development agreements and an approved CC&N area consisting of 43 square miles, thus making this area ready for growth opportunities with respect to water resources.

Unlike SCWC, the MDWID Designated properties do not hold a 100 year assured water certificate, restricting the ability of those properties to be subdivided for redevelopment in the future. This is discussed in the Redevelopment section as an impediment for redevelopment in the Heritage District and Seven Ranches. Goals and objectives are established to address this reality.

### Water System

Within Maricopa's City limits, Global Water has entered into 45 off-site development agreements with property owners requesting potable water service. These agreements allowed for Global Water to masterplan and install regional infrastructure to accommodate the extreme growth Maricopa has experienced, and ultimately will allow for the long term sustainable development of the entire City. In total, SCWC has CC&Ns covering approximately 30 square miles of property within Maricopa's city limits. In accordance with a regional master plan, Global Water has constructed a substantial potable water system to support this area including transmission and distribution pipelines, well sites, treatment, storage and distribution facilities. Currently, SCWC operates a treatment, storage and distribution facility in Rancho El Dorado in conjunction with a second facility in Rancho Mirage that is equipped to accommodate additional growth for the coming years.

At the end of 2014, approximately 12 square miles of SCWC's CC&N had been developed to accommodate a customer base of 18,183 potable water accounts for both commercial and residential users.

The City is fortunate to have the vast majority of infrastructure constructed since 2000, utilizing contemporary water conservation technologies, unlike other communities in the region. Most all green spaces and landscaping in the City are watered with reclaimed effluent, greatly reducing the City's water consumption (reference purple piping goal for all new development) while maintaining a lush desert landscape aesthetic. Additionally, new public buildings are utilizing low flow fixtures, City Codes incentivize water conservation for new development, the housing stock is mostly built under contemporary low-flow plumbing codes, and the City instituted a drought tolerant landscape palette that is integrated in most all development in the City.

Promotion of a continuing and escalating water conservation ethic will enhance the future water supply. Conservation is the most economical water savings source for both provider and user, and in some cases can reduce operating and capital costs. Water rates, conservation programs, and community education will be the primary elements to further conservation efforts. The City of Maricopa has a Vision to become the water service provider, giving the City much greater control over future water quality, delivery and costs to the residents. Goals and objectives for water services in Maricopa are provided in the Utility Services section.

## b. Waste Water

Palo Verde Utilities Company (PVUC), a subsidiary of Global Water Resources, Inc., provides the only sanitary sewer and wastewater treatment services to the citizens and businesses within Maricopa (excluding a very small customer base that continues to utilize septic tank systems in the Heritage District and Seven Ranches). In accordance with a regional master plan, Global Water has constructed a substantial wastewater collection system to support Maricopa

and surrounding areas that includes the necessary gravity and force mains, lift stations and a water reclamation facility (WRF). PVUC operates the WRF with a permitted treatment capacity of 3.0 million gallons per day (3.0 MGD) which is located in Rancho El Dorado. As of year-end 2014, approximately 75% of the facility's capacity was in use. PVUC has initiated the next phase of expansion to properly accommodate the continued growth within the City, and expects to complete this expansion project in 2017. The WRF campus is sized to ultimately accommodate up to 12.0 MGD. Similar water reclamation facilities are planned to be constructed within the City's planning area as growth demands.

### Growth

Although PVUC is less than half built out within its current CC&N inside the city limits, the utility continues to actively pursue service territory expansions with property owners located outside the current CC&N when they request wastewater service. In addition, Maricopa has a substantial planning area outside of the city limits which includes an additional 190 square miles of potential land for development. Inside this planning area, Global Water has already secured an additional 106 off-site development agreements and an approved CC&N area consisting of 72 square miles, thus making this area ready for successful growth opportunities.

### Recycled Water and Conservation

At the WRF, PVUC treats the wastewater and produces Class A+ recycled water, the highest quality for recycled water in Arizona. Currently, about 75% of this recycled water is returned back to the community for irrigation purposes. As required within the off-site development agreements, an extensive purple pipe distribution system has been constructed throughout Maricopa and within most developments (reference Goal 3.b.2 Wastewater Utility). This recycled water distribution system will continue to be extended throughout the City as new development occurs. The direct beneficial use of recycled water on this scale has many benefits to the City including lower demands on the groundwater aquifer while still allowing for the beautification of communities and open spaces. In 2014, a total of 578 million gallons of recycled water was delivered within Maricopa for irrigation purposes, reducing the use of non-renewable groundwater by approximately 30%. Since 2004, PVUC has delivered over 5.2 billion gallons of recycled water for beneficial irrigation uses; successfully achieving a key element of a meaningful conservation program.

### PVUC's 100% Reuse Model:

Global Water strives to remain an industry leader in conservation and reclamation, and is close to completing all necessary steps to achieve a 100% reuse model. In order to achieve and maintain a 100% reuse model, all byproducts of the wastewater treatment process must be utilized for a beneficial purpose. There are two main byproducts that are naturally created from the biological treatment process of the wastewater; recycled water and bio-solids.

As previously mentioned, the recycled water is delivered back to the community for beneficial use non-potable irrigation. During the winter months, the irrigation demands are lower and the incoming sewer flows are higher due to the returning winter citizens, so a surplus of recycled water is created in which PVUC discharges into a local wash, allowing for natural recharge. To achieve full direct beneficial reuse, PVUC is partnering with local businesses to utilize the surplus for agriculture purposes. This is planned to begin late 2015.

The second byproduct of the treatment process created is bio-solids. In 2013, PVUC conducted rigorous testing of its bio-solids byproduct, and determined by state regulations that the byproduct was suitable for agriculture and to fertilize crops grown for non-human consumption. In 2014 PVUC partnered with a local farmer, completed the proper permitting processes, and began delivering all their bio-solids for its beneficial use at local agriculture businesses instead of being taken to a landfill.

This 100% reuse model is an important accomplishment for Maricopa, as beyond the environmental benefits, all the byproducts are going to benefit the local business and farming community.